

### **Amendments to the Claims**

**The following listing of claims will replace all prior versions and listings of claims in the application:**

#### **Listing of Claims:**

1. (currently amended) ~~Device (10) implantable in a tissue of living beings for detecting electrical bioactivity, comprising at least:~~

~~two measuring electrodes (16) for detecting a voltage difference in a tissue and/or living being,~~

~~a transmitter (18) that is fashioned for transmitting information to outside the tissue and/or living being for the purpose of wireless transmission of information relating to the electrical bioactivity with the aid of the voltage difference detected by means of the measuring electrodes (16), and~~

~~an energy receiver (12) that is fashioned for supplying the transmitter (18) with electrical energy from outside the tissue and/or living being, for the purpose of wireless reception of energy,~~

~~characterized in that~~

~~the energy receiver (12) and the transmitter (18) are fashioned for operating in parallel in time, and a voltage sensitive switch (14) is provided which is connected between the two measuring electrodes (16) and the transmitter (18), and is fashioned for switching the transmitter (18) in such a way that the information relating to the time profile or a change in the electrical bioactivity can be coded in analog fashion in the form of a change in one or more transmission properties of the transmitter (18) and the information relating to the identity of the transmitter (18) can be coded in analog fashion in the form of one or more transmission property/properties of the transmitter (18). A device for implantation in a living being for detecting electrical bioactivity comprising:~~

two measuring electrodes for detecting a voltage difference representing bioactivity of tissue of the living being;

a wireless transmitter for transmitting information outside the tissue, the information relating to the bioactivity as represented by the voltage difference detected by said two measuring electrodes;

a wireless energy receiver for receiving energy from outside the tissue to supply said transmitter with electrical energy, said transmitter and said energy receiver operating in parallel in time; and

a voltage sensitive switch connected between said two measuring electrodes and said transmitter, said voltage sensitive switch being positioned for switching said transmitter such that information relating to changes in electrical bioactivity can be coded in analog fashion in the form of a change of at least one transmission property of said transmitter, and information relating to the identity of said transmitter can be coded in analog fashion in the form of at least one transmission property of said transmitter.

2. (currently amended) ~~Device according to Claim 1, characterized in that the transmission property/properties is/are the transmit amplitude and/or the transmit frequency.~~  
A device according to claim 1, the at least one transmission property of said transmitter is at least one of a transmit amplitude and a transmit frequency.

3. (currently amended) ~~Device (10) according to Claim 1 or 2, characterized in that the switch (14) is fashioned in such a way that it switches the transmitter (18) on or off when the detected voltage difference overshoots or undershoots a voltage threshold value which can be fixed in advance.~~  
A device according to claim 1, said switch being configured such that said switch switches said transmitter to an on condition or an off

condition when the detected voltage difference overshoots or undershoots a voltage threshold value which can be fixed in advance.

4. (currently amended) ~~Device (10) according to one of the preceding claims, characterized in that the transmitter (18) comprises a closed resonant circuit, in particular for microwaves and radio waves.~~ A device according to claim 1, said transmitter comprising a closed resonant circuit.

5. (currently amended) ~~Device (10) according to one of Claims 1 to 3, characterized in that the transmitter (18) comprises a photo diode, in particular for IR, UV and visible light.~~ A device according to claim 1, said transmitter comprising a photodiode.

6. (currently amended) ~~Device (10) according to one of Claims 1 to 3, characterized in that the transmitter (18) comprises an LED.~~ A device according to claim 1, said transmitter comprising an LED.

7. (currently amended) ~~Device (10) according to one of Claims 1 to 3, characterized in that the transmitter (18) comprises a quantum well structure.~~ A device according to claim 1, said transmitter comprising a quantum well structure.

8. (currently amended) ~~Device (10) according to one of Claims 1 to 3, characterized in that the transmitter (18) comprises a quantum line structure.~~ A device according to claim 1, said transmitter comprising a quantum line structure.

9. (currently amended) ~~Device (10) according to one of the preceding claims, characterized in that at least two transmitters (18) are provided which can be distinguished on the basis of different transmission properties.~~ A device according to claim 1, further comprising at least two transmitters that can be distinguished on the basis of different transmission properties.

10. (currently amended) ~~Device (34) implantable in a tissue of living beings, for influencing electrical bioactivity, comprising at least:~~

~~two electrodes (36) for applying an electric voltage in a tissue and/or living being for the purpose of influencing the electrical bioactivity,~~

~~an energy receiver (12) that is fashioned for supplying the two electrodes (36) with electrical energy from outside the tissue and/or living being, for the purpose of wireless reception of energy, and~~

~~a control information receiver (38) which is fashioned for the wireless reception of control information signals from outside the tissue and/or living being in order to influence the electrical bioactivity,~~

~~characterized in that~~

~~the energy receiver (12) and the control information receiver (38) are fashioned for operating in parallel in time, and a voltage sensitive switch (14) is provided which is connected between the control information receiver (38) and the two electrodes (36) and is fashioned for switching a flow of electric current from the energy receiver (12) to the electrodes (36) under the control of the control information receiver (38), the identity of the control information receiver and magnitude of the influence on the electrical bioactivity being coded in analog fashion by means of the frequency and/or amplitude of the control information signals. A device for implantation in a living being for influencing electrical bioactivity comprising:~~

two electrodes for applying an electric voltage in tissue of the living being to influence bioactivity;

an energy receiver for receiving energy from outside the tissue to supply the two electrodes with electrical energy;

a control information receiver for receiving wireless control information signals from outside the tissue, said energy receiver and said control information receiver operating in parallel in time;

a voltage-sensitive switch connected between said control information receiver and said two electrodes, said voltage-sensitive switch being positioned for switching a flow of electric current from said energy receiver to said electrodes under the control of said control information receiver; and

the identity of said control information receiver and the magnitude of the influence on the electrical bioactivity being coded in analog fashion by at least one of the frequency and amplitude of the control information signals.

11. (currently amended) ~~Device (34) according to Claim 10, characterized in that the switch (14) can be driven by the control information receiver (38) in such a way that a voltage pulse is generated between the electrodes.~~ A device according to claim 10, said switch being driven by said control information receiver such that a voltage pulse is generated between said two electrodes.

12. (currently amended) ~~Device (34) according to Claim 10 or 11, characterized in that the control information receiver (38) comprises a closed resonant circuit, in particular for microwaves and radio waves.~~ A device according to claim 10, said control information receiver comprising a closed resonant circuit.

13. (currently amended) ~~Device (34) according to Claim 10 or 11, characterized in that the control information receiver (38) comprises a photodiode, in particular for IR, UV and visible light.~~ A device according to claim 10, said control information receiver comprising a photodiode.

14. (currently amended) ~~Device (10, 34) according to one of Claims 10 to 13,~~  
~~characterized in that at least two control information receivers are provided which can be~~  
~~addressed separately on the basis of different reception properties.~~ A device according to  
claim 10 further comprising at least two control information receivers that can be  
addressed separately on the basis of different reception properties.

15. (currently amended) ~~Device (10, 34) according to one of the preceding claims,~~  
~~characterized in that the energy receiver (12) comprises a closed resonant circuit, in~~  
~~particular for microwaves and radio waves.~~ A device according to claim 10, said  
energy receiver comprising a closed resonant circuit.

16. (currently amended) ~~Device (10, 34) according to one of Claims 1 to 14,~~  
~~characterized in that the energy receiver (12) comprises a photodiode, in particular for IR,~~  
~~UV and visible light.~~ A device according to claim 10, said energy receiver  
comprising a photodiode.

17. (currently amended) ~~Device (10, 34) according to one of Claims 1 to 14,~~  
~~characterized in that the energy receiver (12) comprises a piezocrystal for sound waves.~~ A  
device according to claim 10, said energy receiver comprising a piezocrystal.

18. (currently amended) ~~Device (10, 34) according to one of the preceding claims,~~  
~~characterized in that the voltage sensitive switch (14) comprises a voltage sensitive~~  
~~resistor.~~ A device according to claim 10, said voltage-sensitive switch comprising a  
voltage-sensitive resistor.

19. (currently amended) ~~Device (10, 34) according to one of Claims 1 to 17,~~  
~~characterized in that the voltage sensitive switch (14) comprises a chain of open field~~  
~~effect transistors.~~ A device according to claim 10, said voltage-sensitive switch  
comprising a chain of open field effect transistors.

20. (currently amended) ~~Device (10, 34) according to one of Claims 1 to 17,~~  
~~characterized in that the voltage-sensitive switch (14) comprises an electrooptic switch.~~ A  
device according to claim 10, said voltage-sensitive switch comprising an  
electrooptic switch.

21. (currently amended) ~~Device (10, 34) according to Claim 20, characterized in that~~  
~~the electrooptic switch comprises an LED and a photodiode.~~ A device according to claim  
20, said electrooptic switch comprising an LED and a photodiode.

22. (currently amended) ~~Device (10, 34) according to one of the preceding claims,~~  
~~characterized in that it is designed as an integrated circuit (IC).~~ A device according to  
claim 10, said device further comprising an integrated circuit.

23. (currently amended) ~~Device (10, 34) according to one of the preceding claims,~~  
~~characterized in that, with the exception of contact points of the measuring electrodes~~  
~~(16) and/or electrodes (36), the entire device (10, 34) is provided with an electrically~~  
~~insulating materials, in particular varnish.~~ A device according to claim 10, said  
device being at least partially encapsulated within an electrically insulating  
material.

24. (currently amended) ~~Device (10, 34) according to one of the preceding claims,~~  
~~characterized in that the measuring electrodes (16) and/or electrodes (36) are designed as~~  
~~a spur (28).~~ A device according to claim 10, at least one of said electrodes  
comprising a spur.

25. (currently amended) ~~Device (10, 34) according to one of the preceding claims,~~  
~~characterized in that the measuring electrodes (16) and/or electrodes (36) are designed as~~  
~~a capacitor or as a spur with a capacitor (28).~~ A device according to claim 10, at least  
one of said electrodes comprising a capacitor.

26. (currently amended) ~~System for detecting and/or influencing electrical bioactivity, comprising at least two devices (10 and/or 34) according to one of the preceding claims which are implanted in a tissue and/or living being.~~ A device according to claim 10, at least two of said energy receiver, said two electrodes, said control information receiver, and said voltage sensitive switch, is implanted within the tissue.

27. (currently amended) ~~System according to Claim 24, characterized in that at least one energy transmission device and at least one bioactivity detection device and/or at least one bioactivity influencing device are provided outside the tissue and/or living being.~~ A device according to claim 10, at least one of said energy receiver, said two electrodes, said control information receiver, and said voltage sensitive switch is positioned outside the tissue.